

Proposal - Actuarial Minor

A. Mission

An interdisciplinary minor in Actuarial Science structures existing courses to offer a visible career pathway to students in Risk Management and Insurance, Applied Mathematics, Applied Mathematical Economics, Finance and other majors. The objective of the minor is to prepare the students to pass the initial Society of Actuaries exams and to provide the necessary Validation by Educational Experience (VEE) credits towards these exams. Upon graduation from SUNY Oswego, students with this minor will be in a position to work as junior actuaries in the industry and the government.

B. Learning Outcomes and Assessment

Upon completing the minor students will be able to:

1. Use the basic principles of accounting to interpret and construct financial ratios and financial statements.
2. Explain key finance concepts, instruments and measures while using those tools to assess cost of capital, financial performance and asset valuation
3. Use core economic concepts about utility, markets, and elasticity to understand market structure and firm strategy and profitability
4. Explain basic measures of the macroeconomy, what affects those measures, and the role of fiscal and monetary policies in the economy, along with the role of international trade and finance.
5. Using probability and probability distributions in the context of pricing risk.
6. Use an understanding of sampling, statistical inference and major methods of estimation to test hypotheses and build confidence intervals.

Goals:

1. To provide the necessary background in accounting, economics, finance, management, mathematics, probability, and statistics for an entry level position as an actuary
2. To provide the maximum Validation by Educational Experience (VEE) actuarial credits as required by the Society of Actuaries
3. To prepare the students for the first three exams of the Society of Actuaries.
4. To provide some career experience via internships or further study in mathematics.

This minor will be assessed once every five years starting from the year of approval. This assessment will rely on assessment activities of participating departments that use the same core courses.

C. Curriculum Outline

The proposed minor will require at least a total of 24-27 semester credit hours. This minor has one new course in the electives, approved in February 2022. The rest of the courses are all existing courses, regularly offered.

Actuarial Studies Minor (25-28 cr)¹

A. Core Requirements (22-25 cr)

ECO 101 – Principles of Microeconomics credit: 3

ECO 200 - Principles of Macroeconomics credit: 3

FIN 325 – Corporate Finance credit: 3

MAT 240 - Multivariable Calculus credit: 4

MAT 354 – Mathematical Statistics A credit: 3

MAT 454 - Mathematical Statistics B credit: 3

Choose one of the following options:

Option 1

ACC 201 – Principles of Accounting I credit: 3

ACC 202 – Principles of Accounting II credit: 3

Option 2

ACC 321 – Accounting as a Management Tool credit: 3

B. Elective Requirements (3 cr)

Choose one of the following under advisement:

BUS 498 – Management Internship credit: 3

ECO 312 – Introduction to Econometrics credit: 3

MAT 399 - Independent Study credit: 3

MAT 407 – Actuarial Probability credit: 3

MAT 498 – Internship in Mathematics credit: 3

MAT 499 – Independent Study credit: 3

RMI 300 – Introduction to Risk Management and Insurance credit: 3

C. Cognate Requirements (None)

¹ Courses in the minor may have prerequisites.

Note:

The objective of the minor is to prepare the students to pass the initial Society of Actuaries exams and to provide the necessary Validation by Educational Experience (VEE) credits towards these exams. The VEE credits are the college courses (or exam equivalents) necessary to progress in the certification process for an actuary. The VEE credits include three categories: Economics (macro and micro), Accounting and Corporate Finance, and Mathematical Statistics. Fulfilling the VEE requirements alone requires eighteen hours of coursework, not including prerequisite courses.

It is fully expected that students declaring this minor come from major programs where many of this coursework is already required, including Applied Mathematics, Applied Mathematical Economics, Finance, Mathematics, and Risk Management and Insurance.

While this minor is substantial in terms of hours, and includes some hidden prerequisites (MAT 210, 220, CSC 102), this program is consistent with other actuarial science minors at U.S. colleges and universities that also cover all three VEE categories.

D. Enrollment

Based on the numbers of students preparing for actuary exams currently, we expect about ten students to initially. With increased visibility of actuarial science as an option of study, we expect to see a gradual growth in this program to about 25-30 students.

E. Faculty

Below are faculty that currently teach the minor courses on a regular basis:

Accounting/Finance	Economics	Mathematics
Graig Arcuri	Genevieve Alorbi	Mark Baker
Victoria Chu	Said Atri	Gregory Churchill
Dean Crawford	Brian Dempsey	Zheng Hao
Laura Bea Lamb	Glenn Graham	Magdalena Mosbo
Kathleen Locklear	John Kane*	Ampalavanar Nanthakumar*
Heather Losi	Mihai Paraschiv	John Myers
Andrea Pagano	Elizabeth Schmitt	Rasika Churchill
Richard Skolnik		

Eric Tsai		
Hong Wan		

F. Advisement

Declaration of the minor happens through the advisement coordinator in mathematics, who will also have responsibility for assigning advisors. Advisement will be split based on student major and interests:

Coordinator for Applied Mathematical Economics--Economics (John Kane)
 Coordinator for Applied Mathematical Economics--Mathematics (Ampalavanar Nanthakumar)
 RMI faculty--Accounting, Finance and Law (Kathleen Locklear)

The coordinators will work together to update VEE courses on the SOA website.

G. Resources

Personnel – None

Library - \$ **300.00** (for an initial collection about actuarial study and career development)

Equipment – None

Lab – None

Supplies & Expenses – None

Capital Expenditures – None

Other – None

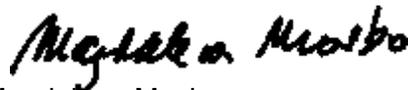
Total = \$ **300.00**

The actuarial minor would also hope for ongoing library resources to update the collection. We anticipate coordinating with participating departments and seeking external funding to supplement the limited library budget.

January 27, 2022

To whom it may concern:

The Mathematics Department supports the proposed minor Actuarial Science. The required mathematics courses are offered regularly and have sufficient number of seats to accommodate the students in the minor. We plan to offer the proposed new elective, MAT 407, every spring as long as there is demand. In the recent past, a number of mathematics majors expressed interest in this career path, and we anticipate that having an Actuarial minor could attract more majors interested in applications of mathematics.

A handwritten signature in black ink that reads "Magdalena Mosbo". The signature is written in a cursive, slightly slanted style.

Magdalena Mosbo
Chair, Department of Mathematics
SUNY Oswego

November 4, 2022

TO: Magdalena Mosbo, Chair, Department of Mathematics
FROM: Ranjit Dighe, Chair, Department of Economics
RE: Economics Department Support for Actuarial Program

This memo expresses the continued support of the Economics Department for the Actuarial Minor. The Economics courses required for the Validation by Educational Experience (VEE) are ECO 101 Principles of Microeconomics and ECO 200 Principles of Macroeconomics. We typically offer multiple sections of both courses, in face to face and online modalities, every semester. In addition, we have been offering Eco 101 and 200 in Winter and Summer sessions, and broadly accept transfer, CLEP, and AP credit for these courses. We do not expect the new Minor to have a significant impact on enrollment in those courses, and we have sufficient excess capacity to absorb the expected modest increase in enrollments.

Although our enrollments have been variable since the Covid-19 pandemic began, we have had excess capacity in these classes in each of the last few years. In the Fall 2022 term the department currently offers six sections with 600 seats in ECO 101 (including one large section with capacity of 400 and two online sections) and six sections with 240 seats in ECO 200, including one online. There is excess capacity in both ECO 101 and 200 in Fall 2022. In Spring 2023 we will offer seven sections (including online sections) of ECO 101, with 280 seats total, and four sections of ECO 200 (including one large section with capacity of 350 and two online sections), with 470 seats total.

We should be able to easily accommodate your students. If you have any questions or concerns, please feel free to contact me.

Subject: Letter of Support for the *Actuarial Minor*

Date: September 7, 2022

To Whom It May Concern:

The Department of Accounting, Finance, and Law has discussed the issues and supports the proposal for an *Actuarial Minor*. If you have any questions or comments, feel free to contact me.

Sincerely,

Tom Tribunella

Thomas Tribunella, PhD, CPA

Chair of the Accounting, Finance and Law Department

Professor of Accounting and Management Information Systems

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